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(54) **IMAGE FORMING DEVICE**

(57)Abstract:
PURPOSE: To easily cope with a jamming.
CONSTITUTION: In the beginning of a paper feeding, the first time (the time required for leading end of sheet material to reach paper discharge sensor 23) is set with the timer 25 by the CPU 24. Then, in the case that the sheet material is not detected by the paper discharge sensor 23 when the time elapsed, the message to the effect that the jamming occurred and that the device is in operation is displayed on the liquid crystal panel 26, and the second time (time required for trailing end of sheet material to pass nip part of pair of fixing roller 19) is simultaneously set with the timer 25. When the time elapsed, the main motor driving circuit 27 is turned off and the message to the effect that the coping with jamming is simultaneously displayed on the liquid crystal panel 26.

CLAIMS

[Claim(s)]
[Claim 1]The 2nd roller pair which conveys succeedingly the web material conveyed by said 1st roller pair on the lower stream of a river which separated predetermined distance from the 1st roller pair which conveys a web material, and said 1st roller pair, A web-material detection means to detect the head of the web material which passed said 2nd nip of a roller pair, Although it provided and predetermined time has passed since feed initiation, when said web-material detection means does not detect the head of a web materialIn the image formation equipment judged that the jam was generated within the pass between said 1st roller pair and said 2nd roller pairImage formation equipment characterized by having the control means which carries out an actuation halt after carrying out predetermined time continuation of said 1st actuation of a roller pair when said web-material detection means does not detect the head of a web material, although predetermined time has passed since feed initiation.
[Claim 2]It sets to a means. the 1st time amount which takes said control means for the head of a web material to reach said web-material detection means at the time of feed initiation -- a time check --When the time amount set to the means passes, it checks whether said web-material detection means has detected the web material. said time check --It sets to a means. the 2nd time amount taken for the back end of a web material to pass said 1st nip of a roller pair when the web material is not being detected -- said time check --said time check -- the image formation equipment according to claim 1 characterized by performing said 1st actuation halt of a roller pair if the time amount set to the means passes.

[Claim 3]said control means -- said time check -- the message of the purport that it is working for coping with the message and the jam of a purport which the jam generated when setting the 2nd time amount to a means -- a display means -- displaying -- and said time check -- the image-formation equipment according to claim 2 characterized by to display the message of a purport which directs jam processing on said display means when the time amount set to the means passes.

[Claim 4]It is image formation equipment according to claim 1 characterized by being a delivery sensor for said 1st roller pair being a fixing roller pair for fixing the toner image imprinted by the sheet surface, for said 2nd roller pair being a delivery roller pair for delivering the web material which finished predetermined processing to outside the plane, and for said web-material detection means detecting a delivery condition.
[Claim 5]Image formation equipment according to claim 1 characterized by preparing the door for jam processing for removing the web material which raised the jam on the pass between said 1st roller pair and said 2nd roller pair.

[Claim 6]Said door for jam processing is image formation equipment according to claim 5 characterized by being deformed and opened when it is formed with the ingredient which carries out heat deformation and the heat beyond predetermined temperature was received from the fixed time amount web material.
[Claim 7]Said door for jam processing is image formation equipment according to claim 5 characterized by having rotated as a core and a pivot being opened when the thrust more than predetermined was received from the web material.
[Claim 8]Said door for jam processing is image formation equipment according to claim 5 characterized by having the part which dips up the web material which exists in said pass when it opens.
[Claim 9]Said door for jam processing is image formation equipment according to claim 5 characterized by having the wrap part for said 1st roller pair when it opens.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to image formation equipments, such as printer facsimile and a copying machine.
[0002]
[Description of the Prior Art]In image formation equipments, such as printer facsimile and a copying machine, a jam (paper jam) may be generated in a web material while conveying the inside of the body of image formation equipment. It is the cause or the lowering of the conveyance force of a roller pair whose curl to which this was attached to the web material for example, during conveyance conveys a web material is the cause.
[0003]In conventional image formation equipment, when a jam is generated in the web material under conveyance, conveyance actuation of a web material is suspended promptly and jam processing (activity which removes the web material which raised the jam) is demanded from the operator.
[0004]
[Problem(s) to be Solved by the Invention]However, when the jam was generated in the web material under conveyance and conveyance actuation of a web material is promptly stopped like the image formation equipment of the above-mentioned conventional example, the following inconvenience arises.
[0005]That is, since the web material under conveyance is in the condition of surely having been inserted into which roller pair within the body of image formation equipment, when conveyance actuation of a web material is promptly stopped according to generating of a jam, it is common [the web material which raised the jam] that it is in the condition of having been inserted into the roller pair. Therefore, in order to remove the web material which raised the jam out of pass, a web material must be sampled from a roller pair.

[0006]However, there was often what (a part of web material remains in the body of image formation equipment in this case) is torn without the ability sampling a web material even if it is difficult for the weak person of the force to sample to sample a web material from a fixing roller pair etc. and has the force to sample when the web material which raised the jam is inserted into the fixing roller pair with the strong pinching force etc.
[0007]Moreover, the activity which samples the web material inserted into the fixing roller pair in an elevated-temperature condition may get injured, and is dramatically dangerous.
[0008]Then, in case this invention was made in view of the situation like **** and performs jam processing, it aims at offering the image formation equipment which needed to be made not to do the activity which samples a web material from a roller pair.
[0009]
[Means for Solving the Problem]the 1st roller pair to which this invention conveys a web material -- the lower stream of a river which separated predetermined distance from (19) and the 1st [said] roller pair (19) -- said 1st roller pair -- with (the 2nd roller pair (20 which conveys succeedingly the web material conveyed by 19))A web-material detection means to detect the head of the web material which passed said 2nd nip of roller pair (20) (23), It provides, and although predetermined time has passed since feed initiation, when said web-material detection means (23) does not detect the head of a web material, the image formation equipment judged that the jam was generated within said 1st roller pair (19), and said the 2nd roller pair pass between (20) (28) is started.

[0010]And when said web-material detection means (23) does not detect the head of a web material although predetermined time has passed since feed initiation in

order to attain the above-mentioned object, after this invention carries out predetermined time continuation of said actuation of the 1st of roller pair (19), it is characterized by having the control means (24) which carries out an actuation halt.
[0011]It sets to a means (25). moreover, the 1st time amount which takes said control means (24) for the head of a web material to reach said web-material detection means (23) at the time of feed initiation -- a time check --When the time amount set to the means (25) passes, it checks whether said web-material detection means (23) has detected the web material. said time check --It sets to a means (25). the case where the web material is not being detected -- the back end of a web material -- said 1st roller pair -- the 2nd time amount taken to pass the nip of (19) -- said time check --said time check -- if the time amount set to the means (25) passes -- said 1st roller pair -- it is characterized by performing an actuation halt of (19).
[0012]
[Function]When according to the image formation equipment of this invention considered as the above-mentioned configuration a delay jam is detected and conveyance actuation of a web material is suspended, already escaped from 1st roller pair (19) currently pinched, and the web material which raised the jam will be come out of it.
[0013]Therefore, it is not necessary to do the activity which samples the web material which raised the jam from 1st roller pair (19) at the time of jam processing.
[0014]Jam processing can be performed only by this taking out the web material which raised the jam from the inside of pass.
[0015]In addition, the sign in the above-mentioned parenthesis is for referring to a drawing, and does not limit the configuration of this invention at all.

[0016]
[Example]Hereafter, the example of this invention is explained based on a drawing.
<Example 1> Drawing 1 shows the whole image formation equipment (printer) configuration concerning the example 1 of this invention.
[0017]This image formation equipment is equipped with the semiconductor laser 1 which discharges the laser light L modulated by the picture signal sent from external instruments (for example, a personal computer, a word processor, etc.). Turning of the laser light L discharged from this semiconductor laser 1 is carried out in the photoconductor drum 3 direction by the polygon mirror 2 currently rotated at the rate of predetermined, scanning horizontally the photoconductor drum 3 top which is charged in homogeneity and is rotating in the direction of an arrow head with the primary electrification roller 4, on a photoconductor drum 3, an electrostatic latent image is formed one by one, and it goes.
[0018]The electrostatic latent image formed on the photoconductor drum 3 is conveyed in the imprint location which is ****-ized, serves as a toner image and touches the imprint roller 6 in the development cylinder 5.
[0019]This image formation equipment is equipped with the sheet paper cassette 7 of a standard equipment, and the sheet paper cassette 8 of option equipment, and when feeding paper to the web material of two or more sheets continuously, these sheet paper cassettes 7 and 8 are used selectively. Moreover, it also has the manual paper feed section 9 for carrying out the manual paper feed of every one web material.
[0020]it lets out the web material (un-illustrating) by which loading receipt is carried out into the sheet paper cassette 7 with the feed roller 10 which rotates in the direction of an arrow head one by one from the top web material -- having -- the resist roller pair under revolution halt -- it is sent to 11.
[0021]it lets out the web material (un-illustrating) by which loading receipt is carried out into the sheet paper cassette 8 with the feed roller 12 which rotates in the direction of an arrow head one by one from the top web material -- having

-- a conveyance roller pair -- 13 -- the resist roller pair under revolution halt -- it is sent to 11.
[0022]the detachable tray 15 the manual paper feed section 9 uses the frame front cover of the body of image formation equipment also [detachable tray], the feed plate 16, the feed roller 17, and the detection sensor 18 with paper -- since -- it becomes.
[0023]Focusing on a pivot 14, the detachable tray 15 is rotatable in the direction of an arrow head, and open Lycium chinense changes into an abbreviation level condition. The feed plate 16 is rotatable in the direction of an arrow head focusing on a pivot 14, and although it separates from the feed roller 17 caudad and is located, if the detection sensor 18 with paper detects those with paper, it will usually move up until a web material touches the feed roller 17. Detection of those with paper of the detection sensor 18 with paper rotates the feed roller 17 in the direction of an arrow head.
[0024]When carrying out the manual paper feed of the web material from the manual paper feed section 9, it is made the attitude that a detachable tray 15 is opened to an abbreviation level condition, and a manual paper feed can be performed first. Then, a web material is carried on a detachable tray 15, and a web-material head is sent in in the body of image formation equipment. If it does in this way, since the detection sensor 18 with paper will detect those with paper, the feed plate 16 moves to a feed location, and the feed roller 17 rotates in the direction of an arrow head. therefore, a manual bypass web material -- the feed roller 17 -- the resist roller pair under revolution halt -- it is sent to 11.
[0025]paper is fed from a sheet paper cassette 7 or 8 grades -- having -- a resist roller pair -- the web material which reached 11 -- a web-material head -- a resist roller pair -- if it runs against the nip of 11, a predetermined loop formation will be formed and a skew condition will be corrected.
[0026]the resist roller pair which the web material which reached resist roller pair 11 takes the timing which doubles a location with the toner image on a photoconductor drum 3, and starts a revolution -- it is sent to the imprint section between a photoconductor drum 3 and the imprint roller 7 by 11, and the toner image on a photoconductor drum 3 is imprinted on a sheet surface with the imprint roller 6 here.
[0027]the web material which finished the imprint of a toner image in the imprint section -- a fixing roller pair (1st roller pair) -- it is sent to 19 and fixed to the toner image imprinted by the sheet surface here.
[0028]the web material which finished fixation processing by fixing roller pair 19 -- a delivery roller pair (2nd roller pair) -- it sends to 20 -- having -- said -- paper is delivered by delivery roller pair 20 to up to the paper output tray 22 outside the plane. in this case, a web material -- the curl stripper 21 -- a passage -- a fixing roller pair -- the curl attached while passing 19 is removed and paper is delivered to up to a paper output tray 22.
[0029]in addition, a fixing roller pair -- 19 and delivery roller pair 20 grade are driven with the power currently transmitted from non-illustrated main motor capacity.
[0030]this image formation equipment -- setting -- a delivery roller pair -- the delivery sensor (web-material detection means) 23 for detecting a delay jam is installed in the direct lower stream of a river of 20. The information which this delivery sensor 23 detected is sent to CPU (control means)24 which controls actuation of the whole image formation equipment. CPU24 judges whether the delay jam was generated based on the information sent from the delivery sensor 23, and is controlling conveyance actuation of a web material.
[0031]The example of delay jam management actuation in CPU24 is shown in drawing 2.
[0032]First, it is checked whether feeding of a web material has been started (S301). If feeding is started, the time amount (T1) taken for the 1st time amount, i.e., the head of a web material, to reach the delivery sensor 23 will be set to a timer (time check means) 25 (S302), and it will wait for time amount

(T1) to pass (S303). And it checks whether if time amount (T1) passed, the delivery sensor 23 has detected the web material (S304), and if it checks having detected the web material, a delay jam will judge that it is not generated and return and the next feeding will be equipped with it to S301.
[0033]On the other hand, when having detected the web material is not able to be checked in S304Judge that the delay jam was generated and the message of the purport which the delay jam generated, and a still working purport is displayed on the liquid crystal display panel (display means) 26 of the image formation device operation section (un-illustrating) (S305). then, the 2nd time amount, i.e., the back end of a web material, -- a fixing roller pair -- the time amount (T2) taken to pass the nip of 19 is set to a timer 25 (S306), and it waits for time amount (T2) to pass (S307).
[0034]And if time amount (T2) passes, the message of a purport which turns OFF the main-motor-capacity actuation circuit 27, and suspends conveyance actuation of a web material (S308), then directs jam processing will be displayed on the liquid crystal display panel 26 (S309), and this control will be ended.

[0035]when CPU24 operates as mentioned above shows the web material JS which raised the delay jam to drawing 3 -- as -- a fixing roller pair -- in 19, and the delivery roller pair pass 28 between 20, it became bellows-like and has stagnated. in this case, the back end of a web material JS -- a fixing roller pair -- it has escaped from and come out of the nip of 19.
[0036]Therefore, the rotatable door 30 for jam processing can be opened in the direction of an arrow head focusing on a pivot 29, and jam processing can be easily performed only by taking out a web material JS from the inside of pass 28.

[0037]In addition, the door 30 for jam processing is usually functioning as one guide member of pass 28. A sign 31 is the guide member of another side.

<Example 2> Another example of a configuration of the door for jam processing is shown in drawing 4.
[0038]The door 32 for jam processing of this example is formed of bimetal, and when heat is received from the web material JS (it is in an elevated-temperature condition since fixing roller pair 19 has just been passed) of the shape of bellows which has stagnated in pass 28, even if it deforms like a continuous-line graphic display, it will be in a half-aperture condition and there is nothing in open focusing on a pivot 33, it can take out a web material JS like a continuous-line graphic display from the inside of pass 28.
<Example 3> Still more nearly another example of a configuration of the door for jam processing is shown in drawing 5.
[0039]if the door 34 for jam processing of this example is attached so that it may become rotatable in the direction of an arrow head focusing on a pivot 35, and it is opened like a continuous-line graphic display -- a foot -- while 34A dips up the web material JS which has stagnated in pass 28 -- a fixing roller pair -- 19 -- a wrap -- it is like.
[0040]In addition, it is also possible to have the door for jam processing opened by the thrust of the web material which stagnates in the shape of bellows in pass 28.
[0041]
[Effect of the Invention]What is necessary is just not to carry out the activity which samples the web material which raised the jam from a roller pair, and to take out out of pass, in case jam processing is performed in the image formation equipment of this invention since it was made stop conveyance actuation of a web material after the web material escaped from and came out of the nip of a roller pair, without stopping conveyance actuation of a web material promptly when a delay jam is detected as explained above.
[0042]For this reason, since it becomes without it seeming that a jam processing activity tears very easy and the web material which raised the jam when it could carry out to insurance, all of web materials can be removed.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]The vertical section side elevation showing the whole image formation equipment (printer) configuration concerning the example 1 of this invention.

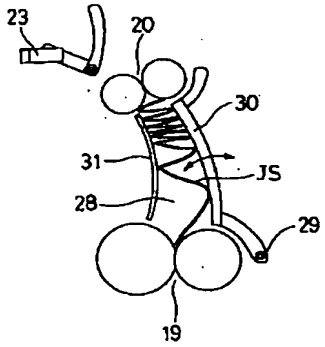
[Drawing 2]The flow chart which shows the example of this image formation equipment of operation.
[Drawing 3]The vertical section side elevation showing the condition that the web material which raised the delay jam in this image formation equipment has stagnated in the pass between a fixing roller pair and a delivery roller pair.

[Drawing 4]The vertical section side elevation showing another example of a configuration of the door for jam processing (example 2).
[Drawing 5]The vertical section side elevation showing still more nearly another example of a configuration of the door for jam processing (example 3).

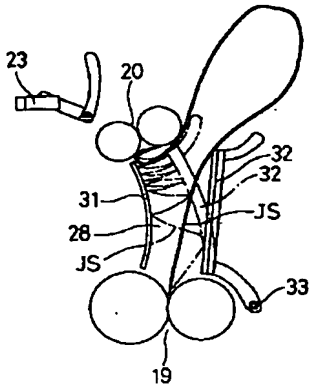
[Description of Notations]
19 Fixing Roller Pair (1st Roller Pair)
20 Delivery Roller Pair (2nd Roller Pair)
23 Delivery Sensor (Web-Material Detection Means)
24 CPU (Control Means)
25 Timer (Time Check Means)
26 Liquid Crystal Display Panel (Display Means)
28 Pass
30, 32, 34 Door for jam processing
34A Foot (it is a wrap part about the part and fixing roller pair which dip up a web material)

DRAWINGS

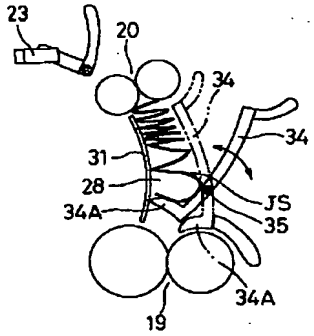
[Drawing 3]



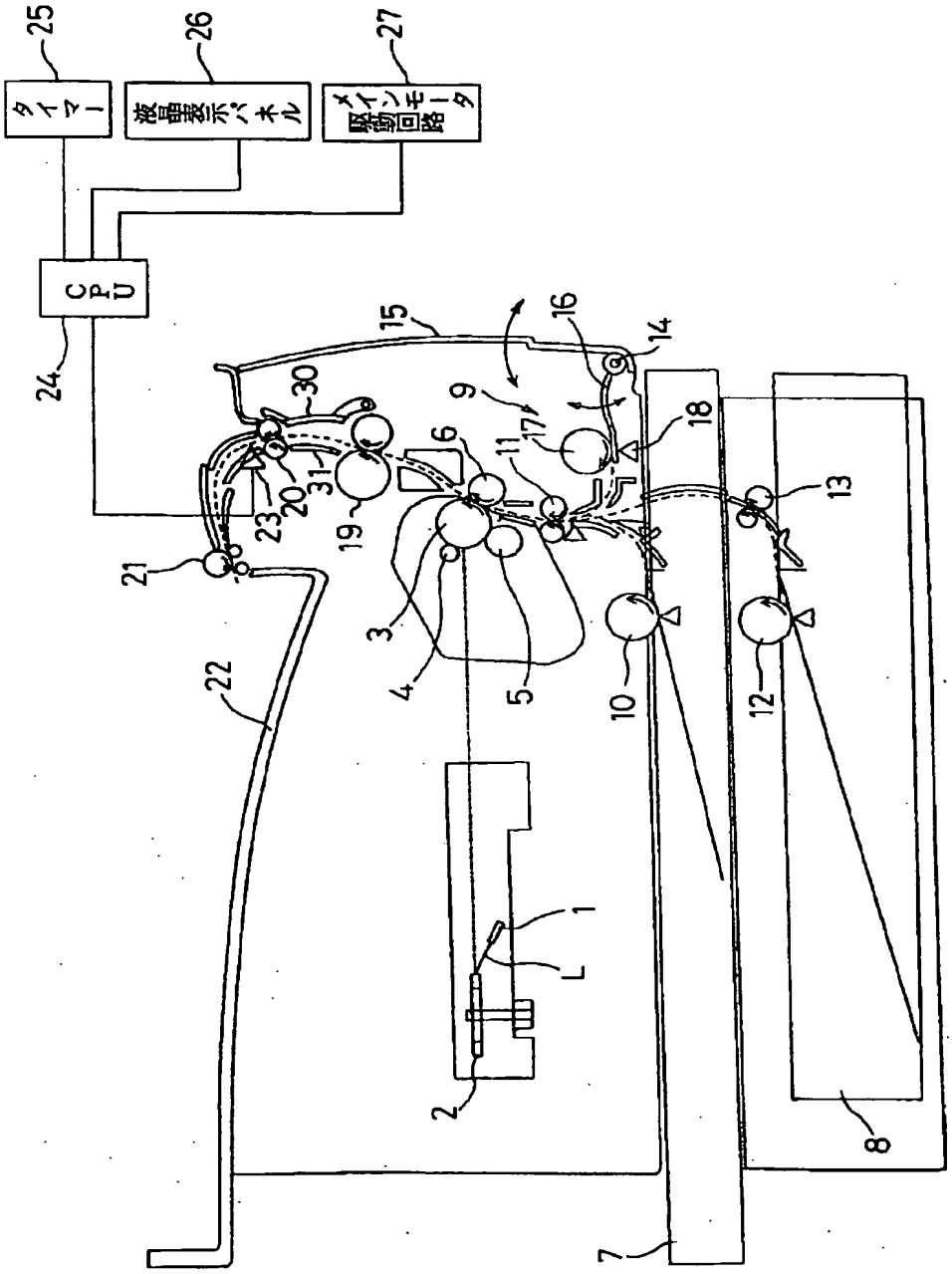
[Drawing 4]



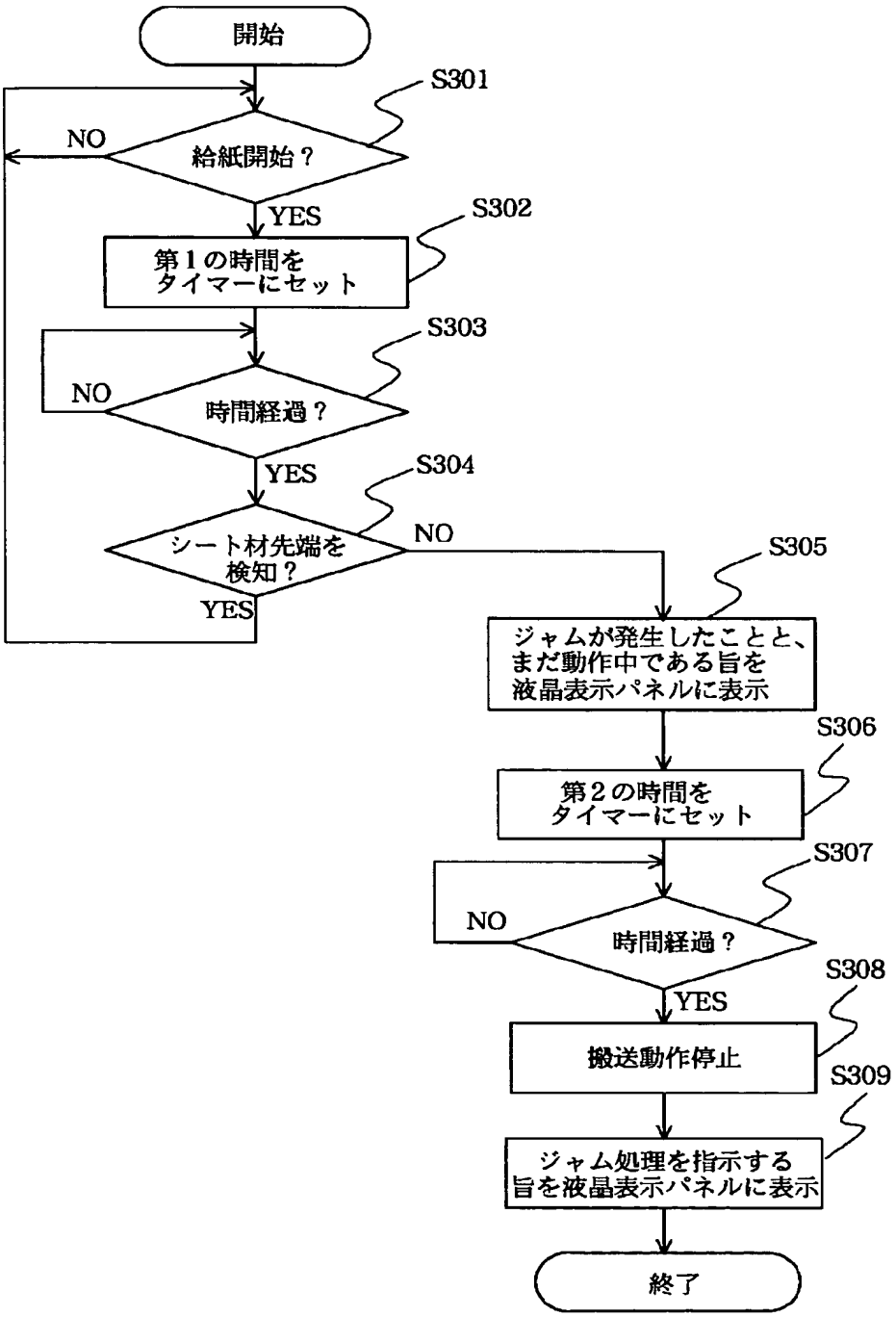
[Drawing 5]



[Drawing 1]


タイマー
液晶表示パネル
メイン駆動回路モータ
CPU
25
26
27
24
15
16
14
30
9
17
18
6
11
13
31
20
23
19
21
22
3
4
5
10
12
1
L
2
8
7

[Drawing 2]


開始
S301
給紙開始？
NO
YES
S302
第１の時間を
タイマーにセット
S303
時間経過？
NO
YES
S304
シート材先端を
検知？
NO
YES
S305
ジャムが発生したことと、
まだ動作中である旨を
液晶表示パネルに表示
S306
第２の時間を
タイマーにセット
S307
時間経過？
NO
YES
S308
搬送動作停止
S309
ジャム処理を指示する
旨を液晶表示パネルに表示
終了

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